

sent of the adjoining owner, but upon giving the requisite notice, according to the forms (Nos. 11, 12, 13), in the Schedule of Notices, or to the like effect, it shall be the duty of the building-owner, and he is hereby required to pull down such timber partitions, and the walls under or over the same, and in lieu thereof to build a proper party-wall; and that at the expense of the owners of all the premises parted thereby."

Our suggestion has been followed, except that we think the plural "buildings" before the words "be taken down," does not convey the meaning intended, which we suppose to be the front of any one building.

The 36th clause still leaves undefined the ultimate fate of goods, &c., removed to safe custody, for the purpose of performing work under the Act.

In clause 37, alteration has been made as we suggested, so that stone-walls having window-lights made improperly in them, are not compelled to be stopped with brick.

In clause 39, relating to building to party-wall chimneys for adjoining owners, according to our suggestion, the following words have been added, after the words "the adjoining owner shall give instructions in writing, or by a plan," the words, "and elevations or other sufficient drawings."

In clauses 41 and 42 provision has been, according to our suggestions, made for determining who shall be paid first any claims upon the proceeds of insufficient sales of the materials of ruinous buildings, and also for payment of the expenses of surveying in case of such insufficiency.

(To be continued in our next.)

#### GRAY'S THURLOCK CHURCH, ESSEX.

SOME short time since architects were invited to send in designs for the restoration of Gray's Thurlock Church, Essex, and it seems a great number of designs were received. We have seen one of these, which is by Mr. East, who, we remember, was so highly spoken of in all the *Kentish papers* some short time since for the alterations then making to churches in that county under his superintendence. The competing architects were requested to attend personally with their designs, which request, we are informed, was complied with, when they were told the committee would meet the following Tuesday, to select designs for the approval of the vestry; on the following Friday these designs were returned to the different competitors, with the information that Mr. East's design was accepted. We have ever been of opinion that men who have studied, and are thoroughly acquainted with it, should be employed to make the selection; we have seen Mr. East's drawing which, being made suitable for the very limited sum proposed for the restoration, is, of course, in a simple and church-like style; we shall say nothing of any particular items of freemasonry which it exhibits, intending by and by to take up the subject upon an enlarged scale; but without further remark, we shall conclude by saying we shall rejoice to hear the committee are pleased with their selection.

#### INSTITUTION OF CIVIL ENGINEERS.

June 11.—The President in the chair.

THE paper read was by Mr. A. Angus Croft, Assoc. Inst. C. E., on the purifying of coal gas, and the application of the products thereby obtained to agricultural and other purposes. The author commenced by stating that in London alone the rental of the different gas companies amounted to 600,000*l.* per annum; but it appeared, however, to be capable of much greater extension than it had yet attained, as it might be rendered much purer by the removal of ammonia, which is the origin of the unpleasant odours and unhealthy effluvia exhaled during its combustion. This desirable object was not accomplished by means of Mr. Croft's process, which was simple, efficacious, and highly economical; the process consisted in passing the gas through a solution of sulphuric acid of the strength of two and a half pounds of oil of vitriol to 100 gallons of water, and a natural supply

of acid, so that the proper amount of free acid may be always kept in the vessel, the whole of the ammonia in the gas is abstracted, preventing the corrosive effect of this impurity on the fittings and meters through which it was transmitted, and rendering the gas capable of being used in dwelling-houses; and also enabling the companies to use dry lime instead of wet lime purifiers, without producing any nuisance on the opening of the vessels, by which a considerable saving is effected, while, at the same time sulphate of ammonia of great purity is obtained, and of such a strength, that the evaporation of one gallon produces eighty ounces of this valuable salt, instead of fourteen ounces, which was the quantity rendered under the former process.

This process has been introduced at the Chertsey, the Imperial, and the Phoenix gas establishments, from which several tons are produced weekly, independent of the provincial gas companies. The author concluded his paper by shewing the great advantage to agriculture by the application of this produce to the land, besides its extensive application to the arts and manufactures; he stated that various experiments upon an extensive scale had been tried with this manure, with great success; one example will suffice for giving an idea of its powers. One-half of a wheat-field was manured with sulphate of ammonia, at the rate of 1*q.* cut to the acre, and at a cost of 1*l.* 2*s.*, the other half with the ordinary manure; the latter produced only 23*l.* bushels of corn, but the former, under the treatment of sulphate of ammonia, produced 32*l.* bushels, thus shewing the immense advantage derived from its application. The author gave an extract from the "Mark Lane Express" of the 27th May last, from which it appeared that seeds of wheat steeped in sulphate of ammonia on the 5th of July had, by the 10th of August, increased in size ten times, and eleven items of nearly equal vigour, while seeds of the same sample unprepared, sown at the same time and in the same soil, had not tilled into more than two, three, and four stems.

In the discussion that ensued, in which Professor Grahame, Mr. Cooper, and many members of the institution took part, the advantages of the system were confirmed, and the necessity for its extension insisted on. The various modes of purifying gas, and the value of the products obtained for agricultural purposes, were canvassed at length. It was stated that seeds steeped for 40 hours in a solution of 1*lb.* of sulphate of ammonia to 1 gallon of water, sown in unmanured loam, produced a heavy crop, and remained green till the end of the season, when every other kind of vegetation became yellow and withered. Another remarkable feature was that faded flowers, when plunged in a weak solution of sulphate of ammonia, were in a short time perfectly restored and revived, and that plants watered with it attained extraordinary health and beauty.

The great loss resulting from the leakage of the gas through the joints and the pores of the cast-iron pipes was incidentally mentioned, and it was stated that in some instances it had amounted to from 25 to 75 per cent. of the total quantity produced.

The following papers were announced to be read at the meeting of June 18:—

No. 688. "On the means of rendering large supplies of water available in cases of fire, and on the application of manual labour to the working of fire-engines," by J. Bruidwood, Assoc. Inst. C. E.

No. 692. "On the construction and proper proportions of boilers for the generation of steam," by A. Murray, Assoc. Inst. C. E.

#### WATERLOO-BRIDGE.

THE half-yearly general meeting of the Waterloo-bridge Company was held at the Crown and Anchor, in the Strand, on the 6th inst. The Rev. Mr. Rush, the chairman of the committee, was called on to preside. The secretary read the report, which stated that the tolls received during the half-year ending the 23rd of February last, amounted to 9,07*l.* 1*s.* 10*d.*; whilst the tolls of the corresponding period of the preceding year amounted to 6,521*l.* 7*s.* 5*d.*, being an increase of 2,556*l.* of which the tolls of the 23rd of February last

buses and carriages, and 236*l.* from foot-passengers. The tolls since February last, up to the 5th inst., amounted to 261*l.* 5*s.* 3*d.* more than was received in the corresponding period of last year. The last dividend which the managing directors were enabled to make was 1*l.* 4*s.* on each share, but, owing to the improved finances of the company, after making a further dividend of 12*s.* on each annuity, there would remain at present a surplus of 1,640*l.* 12*s.* 10*d.* The company proposed to go to Parliament to obtain a bill to enable them to form an embankment, or public terrace, on the banks of the Thames, by which means their property would be greatly improved. The report was confirmed and adopted. Mr. Romero Coates then said that he had a motion to make on the subject of the bridge. Waterloo-bridge was the finest structure of the kind in the world. As a specimen of beautiful architecture, it stood unrivalled; but it was similar to the Irishman's benefit, which was all loss and no gain. Twenty years ago the proprietors might have disposed advantageously of the bridge by means of a public lottery, and he did not see why the same course should not be adopted at the present time. This was the age of speculation. The bridge had cost two millions of money. Why not dispose of it, after the example of some west-end shopkeepers? "at a tremendous sacrifice," when they "are selling off at less than prime cost?" This wealthy metropolis contained 2,000,000 inhabitants; he would, therefore, propose that the bridge should be disposed of by means of a public lottery, and his scheme was this—they should issue 1,000,000 of tickets at a guinea each, and the prizes should be limited to 50, the fortunate holders of which should be, by the terms of the lottery, compelled to sell the bridge to government on the best terms they could, on the understanding that it should be thrown open to the public. The speaker then asked Mr. Coates if he was really serious in his motion? Mr. Coates—Never more so. (Great laughter.) The chairman reminded Mr. Coates that before they could sell the bridge by lottery as he proposed, they must first procure an Act of Parliament to authorize the lottery. Mr. Coates—Oh, precisely; that is what I mean. The chairman said the notion of the hon. gentleman came upon the meeting by surprise, and he thought they ought not to discuss it at the present time. It was a very important subject, and in order to entertain the motion, they ought to summon a special general assembly of proprietors for the purpose, and so insure a very full meeting.—Mr. Coates said he entirely agreed with the chairman; and in order to bring the subject fully before the proprietors, he would cause a special meeting to be summoned, and for this purpose would for the present withdraw his motion, which he had no doubt would be carried when brought before a full meeting of proprietors. A vote of thanks having been given to the chairman, the meeting separated.

#### ART AND SCIENCE.

BY JOHN BYRNE, PROFESSOR OF MATHEMATICS.

ART and science are, indeed, words of familiar use and great significance, yet their difference is but little understood. In the present age, notwithstanding its improvements in knowledge, exists the popular prejudice of terming almost every thing a science. It is true, if we consult our best dictionaries for an explanation, we find nothing but an abstract definition, in which one obscure notion is substituted for another, that rather casts obscurity than light on the subject. I have therefore attempted to draw a more visible parallel between art and science. To science belong such things as men may discover by the use of sense and reasoning, such as the laws of nature, the affections of bodies, the rules and criterions of right and wrong, truth and error, the properties of lines and numbers, &c. To art, on the other hand, belong such things as mere reason would not have attained, things which lie out of the direct path of deduction, and which require a peculiar cast, or turn of mind, to see or arrive at. Or a science is a series of deductions or conclusions which every person endowed with sound faculties may, with a proper degree of attention, see and draw; and a formed science is more than a system of such conclusions.